CLAIMS

What is claimed is:

1.   A network element switch, comprising:

a pair of input nodes, each input node having $2n$ inputs and $2n$ outputs, where n is

5   greater than or equal to 1;

a pair of center nodes, each center node receiving n inputs from each of the input

nodes and having $2n$ outputs;

a pair of output nodes, each output node receiving n inputs from each of the center

nodes and having $2n$ outputs; and

10   wherein an any-to-any mapping is not guaranteed from the pair of input nodes to the

pair of output nodes.

2.   The network element switch of claim 1, wherein mapping links for signals

between nodes is selected to minimize the differences between the number links between the

15   nodes.

3.   The network element switch of claim 1, wherein n is greater than or equal to 2.

4.   The network element switch of claim 1, wherein each center node is multi-cast

20   and each output node is bi-cast.

5.   The network element switch of claim 4, wherein each input node is uni-cast.

6.   The network element switch of claim 4, wherein each input node is bi-cast.

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7.   The network element switch of claim 1, wherein the inputs and outputs carry

STS-48 signals.

8. The network element switch of claim 1, wherein each node is a 2N Clos matrix.

9. A network element switch, comprising:

a pair of input means for switching, each input means for switching having $2n$ inputs and $2n$ outputs, where n is greater than or equal to 1;

a pair of center means for switching, each center means for switching receiving n inputs from each of the input means for switching and having $2n$ outputs;

a pair of output means for switching, each output means for switching receiving n inputs from each of the center means for switching and having $2n$ outputs; and

wherein an any-to-any mapping is not guaranteed from the pair of input nodes to the pair of output nodes.

10. The network element switch of claim 1, wherein mapping links for signals between nodes is selected to minimize the differences between the number links between the nodes.

11. The network element switch of claim 9, wherein n is greater than or equal to 2.

12. The network element switch of claim 9, wherein each center means for switching is multi-cast and each output means for switching is bi-cast.

13. The network element switch of claim 12, wherein each input means for switching is uni-cast.

14. The network element switch of claim 12, wherein each input means for switching is bi-cast.

15. The network element switch of claim 9, wherein the inputs and outputs carry STS-48 signals.

16. The network element switch of claim 9, wherein each means for switching is a 2N Clos matrix.

17. A network element switch, comprising:

a pair of input nodes, each input node having $2n$ inputs and $2n$ outputs, where n is greater than or equal to 1;

a pair of center nodes, each center node receiving n inputs from each of the input nodes and having $2n$ outputs;

a pair of output nodes, each output node receiving n inputs from each of the center nodes and having $2n$ outputs; and

wherein mapping links for signals between nodes is selected to minimize the differences between the number links between the nodes.

18. The network element switch of claim 17, wherein an any-to-any mapping is not guaranteed from the pair of input nodes to the pair of output nodes.

19. A network element switch, comprising:

a pair of input means for switching, each input means for switching having $2n$ inputs and $2n$ outputs, where n is greater than or equal to 1;

a pair of center means for switching, each center means for switching receiving n inputs from each of the input means for switching and having $2n$ outputs;

a pair of output means for switching, each output means for switching receiving n inputs from each of the center means for switching and having $2n$ outputs; and

wherein mapping links for signals between nodes is selected to minimize the differences between the number links between the nodes.

20. The network element switch of claim 19, wherein an any-to-any mapping is not guaranteed from the pair of input nodes to the pair of output nodes.

21. A method of mapping signals across a network element switch having a plurality of input nodes, a plurality of center nodes and a plurality of output nodes, comprising:

for each possible mapping of a specific signal across the network element switch, calculating the number of signals between each of the input nodes and center nodes;

for each possible mapping of the specific signal across the network element switch, calculating the number of signals between each of the center nodes and output nodes; and

selecting the mapping of the specific signal across the network element switch where the difference in the number of signals between each of the input nodes and center nodes is minimized and the difference in the number of signals between each of the center nodes and output nodes is minimized.